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BULLETIN NO. 351

Farm Organization and Family Incomes in Knott County, Kentucky

BY W. D. NICHOLLS AND W. L. ROUSE[1]

This report presents an analysis of the incomes and farm businesses of representative farm families in Knott County, based on 228 records for the farm year ending April 1, 1930, and 25 records for the year ending April 1, 1932. The study was a part of a comprehensive economic and social study carried on by the College of Agriculture, University of Kentucky, in cooperation with the Divisions of Land Economics, Population and Rural Life, and Farm Management and Costs, of the Bureau of Agricultural Economics; the Bureau of Home Economics; and the Forest Service of the U. S. Department of Agriculture. It covered all the land of four of the seven magisterial districts of the county. The object of this study was to procure a complete and accurate picture of conditions in agriculture, forestry, home and community life, standards of living, local industries and other factors needed as the basis for a long-time program for bettering conditions in the area.

Knott County is located in Southeastern Kentucky, separated by only one county, Letcher, from the State of Virginia. The county was selected for the study because it is typical of the 16 counties or parts of counties making up the more precipitous Eastern half of the Kentucky mountain area[2].

[1] Acknowledgments: The following staff members of the U. S. Department of Agriculture contributed to the study: L. C. Gray in charge of the Division of Land Economics, C. F. Clayton and L. J. Peet, of the same division; C. L. Holmes in charge of the Division of Farm Management and Costs and Mr. H. W. Hawthorne of the same division; C. J. Galpin in charge of the Division of Farm Population and Rural Life; Faith Williams of the Bureau of Home Economics, and Bernard Frank, of the U. S. Forest Service.

Staff members of the Kentucky Agricultural Experiment Station participating in the study were: W. D. Nicholls, Merton Oyler, Ronald B. Craig, and W. L. Rouse.

L. C. Gray, C. F. Clayton, C. L. Holmes and W. D. Nicholls had the chief responsibility of planning the study. Field work of the study was under the direction of L. J. Peet. Special acknowledgment is due H. W. Hawthorne for supervision of the collection of the data on family incomes and farm organization. W. B. Collins and S. L. Isbell assisted in gathering the data upon which this report is based.

[2] A similar study was made in 1927 in Laurel County, in an area typical of the less precipitous half of the mountains of Eastern Kentucky. Reports of this study are contained in Kentucky Experiment Station Bulletin No. 305, "Farm Management and Incomes of Farm Families in Laurel County, Kentucky"; Kentucky Experiment Station Bulletin No. 301, "Cost of Living and Population Trends in Laurel County"; and U. S. D. A. Technical Bulletin No. 289, "Land Utilization in Laurel County, Kentucky."

The surface of the area is deeply dissected into very numerous, narrow creek valleys from which steep hills ascend to narrow crests. The valleys are on an average only about 500 feet in width and the distance between ridge crests averages less than half a mile. The watershed between the North Fork of the Kentucky River and the Levisa Fork of the Big Sandy River traverses the county. The various forks of Quicksand, Troublesome, Lotts, and Carr Creeks carry the drainage waters westward from the divide to the Kentucky; the forks of Rock, Jones, Caney, and Right Beaver Creeks flow eastward and north eastward to the Big Sandy. The elevation above sea level averages about 1900 feet and ranges from 700 feet at the mouth of Jones Creek to 2300 feet at the head of Carrs Creek on the Letcher County line.

The upland soils are largely heavy clay and stony clay loams which erode badly when cleared and cultivated. Old cultivated upland fields usually yield an average of less than 15 bushels of corn per acre. On the very limited areas of the narrow bottoms are silt loam soils which give yields of corn most of which range from 25 to 35 bushels per acre.

Two railroads serve Knott County, one located near the northeastern border of the county, a spur from the railroad traversing the Big Sandy Valley; the other near the southern border traversing the upper Kentucky River Valley.

In normal times, coal mines near the county border furnished part-time or full-time employment to members of Knott County farm families within walking or riding distance. The mining camps also afforded a market for vegetables, poultry products, and other farm products produced within a radius of a few miles of these camps.

During 1929, the year covered by this study, the mines were operating on a basis of fairly full employment and good wages and there was a fair market for farm produce in the mining camps. Considerable employment for men and teams was available, also, in the transportation of material for gas pipe lines, the laying of the pipe lines, the construction of a power line and other public work. Notwithstanding these relatively favorable conditions, the receipts from crops and livestock enterprises failed by considerable to pay the expenses

of maintaining and operating the farms. Without the supplemental income from outside sources the families would have been without cash with which to buy necessities. After 1929, when a curtailment or cessation of non-farming incomes occurred as a consequence of the curtailment or cessation of work at the mines and other public work, most of the families immediately faced deprivation of goods and services requiring the expenditure of cash.

About 25 percent of the nearly 227,000 acres of Knott County is cleared land, and about 75 percent is in timber. Originally the whole area of Knott County was covered with a fine stand of timber. Yellow poplar, hickory, beech, and black gum predominated. The original method of logging was to skid the logs to the stream bank and build a splash dam below the logging area. The logs were then rolled into the pond and at the high water the dam was blown out and the logs "splashed" down to the rivers or mills on the railroad. With the improvement of roads and the introduction of motor trucks, most of the timber cut in the county was sawed at local mills and the lumber hauled to market or railroad by truck. In the decade, 1890-1900, lumbering began on a larger scale in the county. About all the timber that was taken out, however, were the poplar, walnut, and white oak trees above 18 inches in diameter on the stump. Coincident with the completion of the railroads and the opening of the mines, closer utilization has taken place, trees as small as 8 inches in diameter were cut for mine timbers. This, however, is confined to those portions of the county nearest the two railroads[1].

The market for export lumber is chiefly regional—to the mines and the railroads in Perry and Floyd Counties. Staves usually are sold to jobbers thruout the United States, and many are exported to France and Italy to be used in making wine casks.

Under present conditions a saw mill must be located only a few miles from the market or railroad if a reasonable profit is to be realized. Hence the mills must be located along the eastern and western boundaries of the county. Under present conditions at least 70 percent of the forest area is com-

[1] Kentucky Agricultural Experiment Station Bul. No. 326, "Forestry in the Eoconomic Life of Knott County", page 18.

mercially unutilizable. Since 1930 the price of timber and income from timbers have fallen greatly.

Until 1930 Knott County was one of the most isolated counties of Kentucky. In that year a new gravel-surfaced highway was completed which now links Hindman, the county seat, with the recently completed arterial highway twelve miles distant which extends from Lexington thru Hazard in Perry County, thence eastward thru the southern edge of Knott County and connects with federal highways to the east, north, and south. In 1933 the connecting highway was extended from Hindman northwest thru Knott County to the federal highway running northward thru Ashland.

Knott County has a population of 44 persons to the square mile, which is a greater density than that of most of the good agricultural sections of Kentucky. Most of the people of this area are of Anglo-Saxon origin, descendants of migrants from the Eastern seaboard who settled in the early 19th century in this rough country where for more than a hundred years the mountain barriers made communication with the outside world difficult. There are no large cities in or near the region. Hindman, the county seat, with a population, in 1930, of slightly more than 500, is the largest town in Knott County.

Hazard, with a population of 7,021, located a few miles from the border of Knott County, in the center of one of the most important coal fields of Eastern Kentucky, serves as an important wholesale and trading center for this area. Lexington, distant 136 miles, and Cincinnati, distant 212 miles, are the most important cities to the northwest and serve as bases of commercial supplies. Ashland, population 29,074, is the closest important town to the north.

I INCOMES OF KNOTT COUNTY FARM FAMILIES

SOURCES OF INCOME

The net incomes received by 228 typical Knott County farm operators, in 1929, and of 25 typical operators, in 1931, are shown in Table 1. Of the total gross "farm receipts" of these 228 operators only about one-third came from crops and livestock enterprises, while two-thirds came from such sources as oil

and gas leases, work of the operator away from the farm, team work, and sale of lumber, mine props, etc. Less than 10 percent of the families derived more than 75 percent of their total income from crops and livestock enterprises.

The total earnings of the operators and their capital amounted to $291 per operator. In addition to this amount, some of the operators had the benefit of contributions from sons and other relatives and other gratuitous[1] receipts such as pensions and interest payments the total of which averaged $155 per family, for the 228 families. The total income available for family spending, in 1929, amounted to $517 per family. Adding to this cash item the estimated value of the family living furnished by the farm, a non-cash item, gave a total family income of $998 per family, for the 228 families, in 1929.

Considering the receipts by districts, receipts from crops, principally vegetables and fruits, in district 6 exceeded the

TABLE 1. Sources of Income, Averages for 228 Farm Operators in Four Magisterial Districts in Knott County, 1929, and 25 Families in the Same County, 1929 and 1931.

	District 1 1929	District 2 1929	District 4 1929	District 6 1929	All Farms 1929	25 Farms 1929	Same 25 Farms 1931
Number of farms	62	50	62	54	228	25	25
Gross receipts from crops and livestock	$158	$175	$163	$200	$173	$234	$150
Total farm expenses	215	162	198	282	215	183	190
Net income from crops and livestock	−57	13	−35	−82	−42	51	−40
Miscellaneous receipts of operator	326	272	324	408	333	411	147
Total earnings of operator	269	285	289	326	291	462	107
Gratuitous receipts[1]	129	162	147	190	156	129	77
Unpaid family labor	71	66	65	80	71	55	102
Family receipts, (Total spendable income)	469	513	501	596	518	646	286
Family living from farm	458	519	495	456	481	530	400
Total family income	927	1032	996	1052	999	1176	686
Number of persons in household	6.1	6.6	6.3	6.4	6.3		

[1] The receipts referred to as "gratuitous" are such from the standpoint of the farm operator. The term is an unsatisfactory one but is used for want of a better.

receipts from that source in the other districts. This was because a greater number of the farms in that district were accessible to better coal camp markets than in other districts. Miscellaneous receipts which came principally from work of the operator away from the farm were also greater in district 6 largely because of the proximity of opportunities for work in the coal mines. Gratuitous receipts, total spendable incomes, and total family incomes were greatest in district 6.

Receipts from Crops and Livestock Enterprises. Receipts from crops and livestock enterprises as an average for the 228 farms failed by $42 to meet the expenses of these farms. Of the total receipts from crops and livestock, $107 came from crops and $66 from livestock enterprises. Livestock enterprises are maintained for family subsistence to a greater extent than crops but are a smaller source of cash income.

Miscellaneous Receipts—Operators' Receipts from Work Away from the Farm, and Other Outside Sources. A large proportion of the total incomes of farm operators was derived from work away from the farm and other outside sources. This was true not only of the county as a whole but of all the four districts. For the 228 farms, the net receipts of crops and livestock enterprises amounted to $173 per farm, while the operator's receipts from miscellaneous sources amounted to $333 per farm. Two hundred and two of the 228 farmers received miscellaneous income from one or more sources. Twenty-four percent of the 202 farmers received less than $100 from miscellaneous sources, 20 percent between $100 and $200, 15 percent between $200 and $300, 8 percent between $300 and $400, 19 percent between $400 and $700, 9 percent over $1,000, and 14 percent over $700.

The sources of the largest miscellaneous income were: Mining, from which 26 farmers received a total of $8,463; team work, from which 34 farmers received $5,394; timber products, from which 32 farmers received $8,950; oil and gas leases, from which 74 farmers received $10,216; storekeeping, from which 20 farmers received $14,487 net returns; timber work, from which 19 farmers received $2,767; carpenter work, from

which 10 farmers received $1,400; other day work, from which 88 farmers received $15,130; cash rent, from which 11 farmers received $4,387; peddling non-farm products, from which 17 farmers received $7,414; coal leases, from which one farmer received $400. Other work away from the farm gave 66 farmers receipts totaling $5,096.

Gratuitous Receipts[1]. These receipts were of a kind which required little or no effort of the farm operator such as pensions, interest, and contributions of other members of the family to the family income. One hundred fifty-seven of the 228 operators had some receipts of this kind. These gratuities were nearly one-third of the total family spendable income. Table 2 shows for these gratuitous receipts, the sources, number of operators receiving them and the amount received per operator. Forty-two percent of these gratuitous receipts were contributions by sons; 23 percent by housewives and 8 percent by daughters. Pensions received by 9 operators constituted 5 percent of the gratuitous receipts.

TABLE 2. Income Received by Farm Operators from Gratuities such as Pensions, Gifts, and Earnings of Members of the Family Other Than the Operator.

Source of Income	No. of Families	Average per Family
Son	74	$193.99
Daughter	35	94.15
Homemaker	68	121.35
Other family members	9	232.67
Pensions	12	247.44
Interest	11	236.73
Gifts	24	65.76
Miscellaneous	5	60.00
Total	157	225.78

[1] See footnote, page 147.

Seventy-four operators received cash contributions from sons residing at home of $14,355. In 28 of these cases constituting 11 percent of the total contributions of sons, receipts were derived from farm work; in 26 cases, or 53 percent, from work at the mines; in 10 cases, or 14 percent, from lumbering; and in 20 cases, or 22 percent, from other work.

Next in importance to the cash contributions of sons, to the family income, were the cash contributions from homemakers. Sixty-eight operators received a total of $8,252 from this source. The contributions of thirty-four homemakers were derived from keeping boarders, which source accounted for about half of the total contributions of homemakers. The contributions of twenty-four homemakers were obtained by work away from home, at such employment as housework, nursing, peddling household articles, such employment furnishing about 30 percent of the money which homemakers contributed to the family receipts. Sixteen homemakers contributed to the family receipts by doing at home such work as laundering, caring for children, canning fruits and vegetables, and making baskets. This service, performed for persons outside the household, furnished the money for 13 percent of the total contributions of homemakers. Seven homemakers contributed earnings from quilting and sewing, which made up 7 percent of the homemakers' total contributions.

Thirty-four operators had contributions totaling $3,295 from the earnings of daughters residing at home. Forty-four percent of this amount came from cash earned from housework by daughters of 24 families. Three daughters who taught school earned $1,302, about 40 percent of the contributions of daughters. In 8 other families, daughters contributed earnings totaling $545, or 16.5 percent of the contributions of daughters.

To the receipts of 9 families, members of the households other than the operator, homemaker, sons and daughters residing at home contributed a total of $2,094 and to the receipts of nine families, persons receiving federal pensions contributed a total of $2,969. Eleven families received interest payments which totaled $2,604, while 23 families had the benefit of gifts (principally from children away from home) which

totaled $1,578. Five operators had miscellaneous gratuitous receipts totaling $300.

Unpaid Family Labor. In computing farm expenses the unpaid labor on the farm by members of the family other than the operator was classed as an expense and was subtracted from the farm receipts. Since this money was available for family spending it is included, in Table 3, in the items making up the total family spendable income. The records of one hundred and forty-six of the 228 farms showed the item of unpaid family labor, which ranged from $25 to $375. On forty percent of the farms the item was less than $100; on 51 percent, between $100 and $199, and on 9 percent, $200 or more.

Total Family Spendable Income. The total spendable income of the 228 families average $518. One-fifth of the families had spendable incomes of $200 or less. Half had incomes of less than $400. Only one-fifth had incomes greater than $800. (See Table 3) Eleven percent of the families had total family incomes (spendable income plus the value of perquisites) less than $500, 52 percent between $500 and $1,000, 21 percent between $1,000 and $1,500, and 16 percent over $1,500.

TABLE 3. Number of Families with Spendable Incomes of Specified Amounts, 228 Knott County Families, 1929.

Size of Income	No. of Families	Size of Income	No. of Families
$100 and less	16	$ 701 to $ 800	10
$101 to $200	33	$ 801 to $ 900	15
$201 to $300	34	$ 901 to $1000	6
$301 to $400	32	$1001 to $1100	5
$401 to $500	27	$1101 to $1200	3
$501 to $600	16	$1201 to $1300	5
$601 to $700	15	$1301 and over	11

Family Living from the Farm. As has already been stated, the crops and livestock enterprises on most of the farms were

principally for the family subsistence. Perquisites or family living items constituted the greater part of the total value of products of the farming enterprises. If perquisites and outside income are omitted from the receipts, the total income was considerably less than expenses, $173 compared with $215.

The value of the family living from the farm, obtained by careful detailed estimates for each farm family, averaged $481 for the 228 families and ranged from $155 to $1,279. The number of families in the various groups of perquisite values is shown in Table 4. Two-thirds of the families had perquisites ranging in value between $300 and $600. Only 5 families had perquisities worth less than $200 per family and in only 12 families was their value greater than $800 per family.

TABLE 4. Value of Family Living Furnished by the Farm, 228 Knott County Farms.

Value of Family Living Between	No. of Farms
$— to $ 100	0
$101 to $ 200	5
$201 to $ 300	27
$301 to $ 400	55
$401 to $ 500	49
$501 to $ 600	46
$601 to $ 700	21
$701 to $ 800	13
$801 to $ 900	5
$901 to $1000	4
Over $1000	3
Total	228

The amounts and values of the items making up the perquisites furnished by the farm for the family living are presented in Table 5. Food constituted eighty-seven per cent of the total value; the use of the house, seven per cent; coal and wood for fuel, 6 per cent.

TABLE 5. Family Living from the Farm. Average for 228 Knott County Farms, by Districts, 1929.

	All Farms	District 1	District 2	District 4	District 6
Average number in household	6.3	6.1	6.6	6.3	6.4
Foods: Dolls.	415	403	446	432	385
Corn Bus.	20	16	25	24	17
Dolls.	30	22	40	35	25
Potatoes Bus.	29	27	28	32	29
Dolls.	29	27	29	32	29
Sweet potatoes Bus.	10	11	8	13	8
Dolls.	15	17	13	19	12
Honey Lbs.	10	12	11	12	4
Dolls.	3	3	3	3	1
Sorghum syrup Gals.	2	1	2	1	4
Dolls.	2	1	2	1	4
Vegetables and fruits Dolls.	93	91	91	96	95
Butter Lbs.	168	153	207	166	150
Dolls.	48	41	61	49	44
Whole milk Gals.	112	96	141	117	90
Dolls.	34	31	44	36	27
Skim-milk Gals.	31	65	15	34	4
Dolls.	6	13	3	7	1
Buttermilk Gals.	197	193	221	195	181
Dolls.	39	38	44	39	36
Pork Lbs.	486	499	482	520	436
Dolls.	72	74	73	76	66
Poultry No.	44	43	41	41	52
Dolls.	25	26	22	23	28
Eggs Doz.	83	83	96	73	84
Dolls.	18	19	20	15	17
Other food items[1] Dolls.	1	—	1	1	—
Fuel:					
Coal Bus.	249	225	257	256	263
Dolls.	25	21	25	26	26
Wood Cords	3	4	3	3	2
Dolls.	6	7	5	6	3
Other items[2] Dolls.	2	1	1	3	1
House rent[3] Dolls.	33	26	42	28	40
Total family living from farm Dolls.	481	458	519	495	455

[1] Small amounts of beef, mutton and cheese.

[2] Tobacco and wool.

[3] House rent is derived by taking 10 percent of the total value of the house. This is to cover interest, depreciation, upkeep, taxes and insurance.

For 8 families the value of the farm-furnished food was less than $200; for 48, from $200 to $299; for 61, from $300 to $399; for 55, from $400 to $499; for 27, from $500 to $599; for 17, from $600 to $699; for 7, from $700 to $799; for 5, $800 and over. Vegetables, potatoes and fruits made up about one-third of the value of all farm-furnished foods; milk, cream, and butter another third; pork, about one-sixth; poultry and eggs, about one-tenth, and corn about one-fourteenth.

The farmers who had the highest net earnings also had the largest values of family living from the farm, the twenty farmers with the highest earnings had perquisites averaging $664 in value, as against $436, the average value of the perquisites of the 20 farmers having the lowest net earnings.

Total Family Income. The living of farm families is derived from the net receipts from various sources and from the items furnished by the farm for the use of the family. These two classes of income averaged $518 and $481 respectively for the 228 families. The sum of the two was $999 per family. Twenty-four of the 228 families had family incomes of less than $500, one hundred and nineteen between $500 and $1,000, forty-eight between $1,000 and $1,500, twenty-nine between $1,500 and $2,000 and only eight above $2,000.

FAMILY INCOMES IN 1931

Records of the incomes for 25 of the 228 farms were obtained for the year 1931. The figures compared with figures for the same 25 farms and the 228 farms two years before are given in Table 1. During the two years intervening between the two surveys, operations had been discontinued in a considerable number of mines and in others curtailed to a small fraction of a full time basis. One of the immediate results was a drastic reduction or the total discontinuance of the income which farmers and their sons had been receiving for part time or full time work at the mines—work which had made up the greater portion of the total income of many of the farm families. Another result was that unemployment cut off the buying power of families living in the mining camps, in consequence of which the market for vegetables, fruits, eggs, poultry, milk, butter, and other produce in the territory surround-

ing the mines was largely cut off. Total farm receipts declined more than half, receipts from miscellaneous sources nearly two-thirds, and net farm income three-fourths. Gratuitous receipts decreased 40 percent and total family spendable income 56 percent.

The reduction of income brought many families to a bare subsistence level and a large proportion applied for and received food and clothing from the Red Cross and other relief agencies. The smaller figure for the value of the family living from the farm, $400 in 1931 as compared with $530 in 1929, is due chiefly to the lower prices ascribed to family perquisites because of reduced sale values rather than a decrease in the amounts of these farm-furnished items.

TENURE STATUS OF OPERATORS

Of the 228 operators 20 percent owned no land. Eighty of the 182 owners rented additional land or rented out land or both. The tenure status of the 228 operators was as follows: 102 were owners who neither rented nor rented out land. Thirty were owners renting additional land, 18 of them renting on shares, 6 for cash, 3 had free rent, 1 paid for rent by work, 1 rented part on shares and part for cash, and 1 gave a share for the use of part of the land and got the use of the other part rent free. Forty-four operators were owners who rented out some of their land, 41 of these on shares, 2 for cash and 1 gave the use of the land rent free. There were six owners who both rented and rented out land. Three of these rented and rented out on shares, two rented and rented out for cash and one rented on shares and gave the use of some land rent free.

Of the forty-six non-land-owners, 23 rented on shares, 11 for cash, 10 got the use of land rent free and two rented part of the land on shares and part for cash. Of the 11 cash renters one sublet some land on shares and of the 23 share renters one sublet some land on shares.

II ORGANIZATION AND MANAGEMENT OF FARMS

An important object of the economic study in Knott County was to ascertain the kind and amount of resources

which farm operators had at their command, how these resources were organized, what net returns were derived from their use, and what factors were most significant in making net returns greater or smaller.

LAND UTILIZATION

The uses to which the land in the 228 farms was put is shown in Table 6. The total area operated was 113 acres per farm. A third of the farms were smaller than 50 acres, and two-thirds smaller than 100 acres. Only 20 of the 228 farms were larger than 200 acres.

TABLE 6. Land Utilization and Livestock on 228 Knott County Farms. Averages by Districts.

	All Farms	District 1	District 2	District 4	District 6
Number of farms	228	62	50	62	54
Acres:					
Operated, total	113.0	109.3	79.9	95.0	168.8
Level land	3.7	3.4	3.7	2.8	5.2
Woodland	66.2	64.7	40.7	54.4	105.2
Pasture	19.3	20.0	13.7	13.3	33.4
Idle land	11.0	8.1	9.0	11.3	13.0
Waste land	3.7	4.4	2.2	3.8	4.0
Acres in crops:	12.9	12.1	14.3	12.2	13.2
Corn	9.2	9.0	9.9	8.5	9.8
Grass hay	.5	.5	.8	.6	.2
Legume hay	.5	.4	.9	.4	.3
Small grain and other hay	.3	.3	.2	.3	.5
Potatoes	.5	.5	.5	.5	.4
Orchard	1.0	.7	1.2	1.0	1.1
Garden	.8	.7	.7	.9	.8
Other crops	.1	*	.1	*	.1
Number of livestock:					
Horses and mules	1.4	1.4	1.5	1.1	1.3
Cows	1.3	1.3	1.4	1.3	1.3
Other cattle units	.8	1.1	.6	.9	.6
Sows	.6	.6	.6	.7	.3
Other hogs	3.9	3.3	3.0	4.2	2.2
Chickens	33.0	33.4	37.0	27.9	32.4

*Less than one-tenth of 1 acre.

Most of the land on these farms was steep and broken and unfit for crop production. Of level land there was an average of only 3.7 acres per farm. Thirty-eight of the 228 farms had no level land. Fifty-seven had less than one acre. Thirty-seven had between one and two acres. Forty-five had between 2.1 and 3 acres. Twenty had between 3 and 4 acres. Fifteen had between 4 and 5 acres. Twenty-nine had between 5 and 10 acres. Eighteen had between 10.1 and 15 acres. Only seven of the 228 farms had 20 acres or more of level land.

Two-thirds of the total area of the farms was woodland. Land classed as pasture occupied 18 percent of the total area, but in most cases this so-called pasture land consisted of scattered bushes with little or no grass. It differed but little from the land classified as idle land which constituted about 5 percent of the farm area.

There were 13 acres of crops per farm, most of which were grown on steep slopes. The 9.2 acres of corn per farm constituted seven-tenths of the land devoted to crops. The 1.3 acres of hay per farm made up only about one-tenth of the cropped area. Gardens and potato patches averaging 1.3 acres per farm made up another tenth. Orchards occupied an average of 1 acre of the 13 acres of crop land.

Very small acreages of crops were the rule on most farms. On 9 percent of the farms there were 5 acres or less of crops per farm. On 34 percent between 5.1 and 10 acres, on 28 percent between 10.1 and 15 acres, on 19 percent between 15.1 and 20 acres, on 6 percent between 20.1 and 25 acres. On only 9 of the 228 farms was the crop average greater than 25 acres.

One-fifth of the farms had 5 acres or less of corn per farm, one-half had from 5.1 to 10 acres, one-fifth had from 10.1 to 15 acres. Only 18 of the 228 farms had more than 15 acres of corn per farm.

Of potatoes 121 of the 228 farms had one-third of an acre or less, 58 had between one-third acre and 1 acre, 36 had between 1.1 and 1.5 acres. Only 13 had 1.5 acres or more.

An examination of the land utilization in the four districts does not indicate many important differences. The acreage of crops per farm was very similar in the four districts, but farms in district 6 had a considerably smaller proportion

of their total area in crops and a greater proportion of woodland.

The average size of farms in district 6 considerably exceeded that in the other districts. District 6 had a greater proportion of farms larger than 100 acres. District 2 had the largest proportion of farms of less than 100 acres. Farms in districts 2 and 4 had a somewhat smaller proportion of woodland than those in the other two districts.

LIVESTOCK

Because of the high price of feeds and scarcity of land suitable for raising feed, the numbers of livestock were sharply limited on Knott County farms. There was an average of only 3 productive animal units per 100 acres of land on the 228 farms. This is in contrast to 13 units per 100 acres on representative Bourbon County farms and the same number on representative Union County farms. Most of the livestock consisted of work stock and milk cows. There was an average of 1.4 horses and mules per farm, 1.3 cows, .8 head of other cattle, .6 of a sow, 3.9 other hogs, and 33 chickens.

Eighteen of the 228 operators did not own a horse. These depended upon hiring work stock or they dug in and cultivated the crops by hand. One hundred and five of the operators had only one horse each; 18 had one horse and an extra horse part of the year; 54 had two horses; 3 had two horses and an extra horse part of the year; 7 had three horses; 2 had three horses and an extra horse part of the year; 3 had four horses; 2 had four horses and an extra horse part of the year, and 1 had six horses.

Twelve of the 228 operators had no cows; 11 had one cow part of the year; 121 had one cow; 22 had one cow and an extra cow part of the year; 42 had two cows; 12 had two cows and an extra cow part of the year. Only 8 had three or more cows.

Of other cattle, 83 farms had none, 102 had calves or heifers equivalent to less than one mature head, 26 had the equivalent of between one and two mature head, 7 between two and three head, and only ten had the equivalent of more than three mature head.

One hundred and ten of the 228 farms had no brood sows; 31 had one sow part of the year; 64 had one sow; 9 had one sow and a second sow part of the year; only 19 had two or more sows. Altho nearly half of the 228 families did not keep a brood sow, it was a common practice for families to buy one or more shoats and feed them for slaughter.

Only 19 of the 228 farms had sheep. Nine of these had 5 head or less; the other farms ranged from 6 to 18 head per farm. Only eleven of the 19 farms had sales of sheep or wool.

Of chickens, 15 of the 228 farms had less than 10; 89 had between 10 and 29; 80 had between 30 and 49; 32 had between 50 and 69; and only 12 had 70 or more. A few farms had turkeys, geese, ducks, and guineas, the aggregate value of these for all farms being approximately $52.

CROP YIELDS

The yield of corn per acre furnishes the best index of the productiveness of tracts of land in this area. The yield on all the farms studied averaged 19.6 bushels per acre. The yield on 47 of the 224 farms on which corn was grown was less than 15 bushels per acre—on twelve of the 47, 10 bushels or less per acre. The yield on 53 farms was between 15 and 19.9 bushels per acre, on 64 between 20 and 24.9 bushels, on 39 between 25 and 29.9 bushels, on 17 between 30 and 34.9. On four farms the yield was 35 bushels or more per acre, the highest being 40 bushels per acre.

QUANTITIES AND VALUES PRODUCED PER FARM

Corn. The 228 farms produced an average of 181 bushels of corn per farm. Thirty-two, or one-seventh of the farms, had a total production of less than 100 bushels each, 103 between 100 and 199 bushels, 62 between 200 and 299 bushels, 24 between 300 and 399 bushels and 7 produced 400 bushels or more. Tenants averaged 135 bushels of corn per farm. One-fifth of the tenants had less than 100 bushels each.

Potatoes. Fourteen farms each had less than 15 bushels, 35 between 15 and 29 bushels, 64 between 30 and 44 bushels, 38 between 45 and 59 bushels, 17 between 60 and 74 bushels,

27 between 75 and 89 bushels, 23 between 90 and 104 bushels, and ten, 105 or more. Tenants averaged 40 bushels per farm. Fifteen per cent of them had less than 15 bushels per farm while 6 per cent of all the 228 operators had less than 15 bushels per farm.

Sweetpotatoes. One hundred and seventy-four of the operators had sweetpotatoes, 39 having less than 10 bushels, 62 between 10 and 19.9 bushels, 39 between 20 and 29.9 bushels, 17 between 30 and 39.9 bushels, and 17 forty bushels or more. The total production of sweetpotatoes averaged 19 bushels per farm for farms growing them, or 14 bushels for the 228 farms. The total production of sweetpotatoes grown by the renters differed but little from that of all the operators.

Vegetables. The 228 farms produced vegetables the total value of which averaged $108 per farm. This included the value of vegetables used in the home as well as those sold. The value of vegetables produced was less than $50 on 35 farms, from $50 to $74 on 59 farms, $75 to $99 on 41 farms, $100 to $124 on 28 farms, $125 to $149 on 23 farms, $150 to $174 on 13 farms, $175 to $199 on 12 farms and $200 and over on 17 farms.

Fruits. One hundred and seventy-nine operators had some fruit, the average value being $35 for the one hundred and seventy-nine operators. Forty-nine operators had no fruit, 43 had between $1 and $9 worth, 35 between $10 and $19 worth, 29 between $20 and $29 worth, 14 between $30 and $39 worth, 9 between $40 and $49 worth, 17 between $50 and $59 worth, 11 between $60 and $69 worth, 8 between $70 and $79 worth, and 13, $80 or more. The values include home used fruit as well as that sold.

Hay. The chief source of roughage was corn fodder or the blades stripped from the corn stalks. This feed was carefully saved from nearly all of the corn acreage. Only 96 or about three-sevenths of the 228 farms produced hay of any kind. Forty-four of the 96 farms had less than two tons of hay each, 31 between 2 tons and 3.9 tons, and 21 had 4 tons or more. The total production of hay averaged 2.6 tons for farms producing

hay, or 1.1 tons if all farms are included in the average. Only about one-fourth of the tenants produced hay. The total production of hay per farm for tenants producing hay was 1.1 tons.

Cattle. Two hundred and seventeen, or 95 percent of the operators, had net values* from cattle or cattle products. Forty-five each had net values of less than $100, 109 between $100 and $199, 43 between $200 and $299, 16 between $300 and $399, and four, $400 or more. The net value per farm averaged $166 for the 217 farms and $158 for the 228 farms. Eighty-five percent of the 46 renters had net values from the cattle enterprise. These averaged $138 for renter farms having net cattle values and $118 for all renter farms.

Poultry. Two hundred and twenty of the 228 operators had net values from the poultry enterprise, 52 each had net values less than $50, 120 between $50 and $99, 35 between $100 and $149, 13, $150 or more. The net value per farm averaged $78 for those having poultry and $75 for all farms and $60 for rented farms.

TABLE 7. Quantities and Values Produced Per Farm, 228 Knott County Farms.

	Average Production of 228 Farms	Average of Farms Producing		Average of 46 Tenants	Average of Tenants Producing	
	Av.	No. Producing	Av.	Av.	No. Producing	Av.
Corn (bushels)	181	227	182	135	46	135
Potatoes (bushels)	52	226	53	40	46	40
Sweetpotatoes (bushels)	14	174	19	12	33	17
Hay (tons)	1.1	96	2.6	.3	12	1.1
Vegetables (dollars)	108	228	108	....	....	....
Fruits (dollars)	27	179	35	....	....	....
Cattle (dollars)	158	217	166	118	39	139
Poultry (dollars)	75	220	78	60	43	65
Hogs (dollars)	78	203	88	52	36	67

*Net values arrived at by adding gross sales, inventories at the end of the year and values of the product used by the family and subtracting from the sum of these the sum of the purchases, the inventories at the beginning of the year.

Hogs. All but 25 of the 228 farms produced net values from the hog enterprise. Sixty-two had net values of less than $50, 68 between $50 and $99, 46 between $100 and $149, 14 between $150 and $199, and 13, $200 or more. The average for the farms having net values from hogs was $88 per farm and the average for all farms was $78. The corresponding figure for tenants were $67 and $52.

QUANTITIES AND VALUES OF PERQUISITES USED BY THE FARM FAMILIES

The amount of home-produced perquisites consumed by farm families in this area is of particular significance since these perquisites greatly exceeded in value the crops and livestock products sold. Table 5 shows the quantities and values of the various kinds of perquisites used by these families.

Corn. One hundred and seventy-seven families used home-raised corn in the family diet in the form of meal or hominy. The average for the 177 was 26 bushels per family. Fifty-one families used none, 31 between 1 and 9 bushels, 45 between 10 and 19 bushels, 50 between 20 and 29 bushels, 19 betwen 30 and 39 bushels, 11 between 40 and 49 bushels, 15 between 50 and 59 bushels, and 6 used 60 bushels or more.

Potatoes. Two hundred and twenty-six families used home-raised potatoes, at an average of 29 bushels per family. Two families used none, 9 used between 1 and 9 bushels per family, 60 between 10 and 19 bushels, 58 between 20 and 29 bushels, 41 between 30 and 39 bushels, 23 between 40 and 49 bushels, 23 between 50 and 59 bushels, and 12 used 60 bushels or more.

Sweetpotatoes. One hundred and seventy-four families consumed home-raised sweetpotatoes, an average of 15.5 bushels for the 154 families. Fifty-four families used none, 58 between 1 and 9 bushels, 75 between 10 and 19 bushels, 20 between 20 and 29 bushels, 12 used 30 bushels or more.

Sorghum Syrup. Eighteen of the 228 families consumed home-produced sorghum syrup, the average amount for the 18 families being 26 gallons per family.

Vegetables. All the families consumed some home-raised vegetables, at an average value of $74 per family. Two families used less than $25 worth, 58 between $25 and $49 worth, 69 between $50 and $74 worth, 54 between $74 and $99 worth, and 45 used $100 worth or more.

Fruits. One hundred and eighty-two of the families consumed home-grown fruits, averaging $24 worth per family. Forty-six families consumed none, 50 between $1 and $9 worth, 39 between $10 and $19 worth, 42 between $20 and $29 worth, 13 between $30 and $39 worth, 13 between $40 and $49 worth, 11 between $50 and $59 worth and 14 consumed $60 worth or more.

Butter. Two hundred and sixteen of the families used home-produced butter at an average of 177 pounds per family. Twelve families used no home-made butter, 21 used between 1 and 99 pounds, 56 between 100 and 149 pounds, 58 between 150 and 199 pounds, 41 between 200 and 249 pounds, 17 between 250 and 299 pounds, 12 between 300 and 349 pounds and 11 used 350 pounds or more.

Whole Milk. One hundred and eighty-three families consumed home-produced milk at an average of 139 gallons per family. Forty-five used no home-produced milk, 14 used between 1 and 49 gallons, 60 between 50 and 99 gallons, 44 between 100 and 149 gallons, 29 between 150 and 199 gallons, and 36 consumed 200 gallons or more.

Skim-milk and Buttermilk. Forty-one of the families consumed home-produced skim-milk at an average of 173 gallons per family. Two hundred and five families consumed home-produced buttermilk at an average of 219 gallons per family. Twenty-three families used none, 6 families between 1 and 100 gallons, 82 between 100 and 199 gallons, 66 between 200 and 299 gallons, 42 between 300 and 399 gallons, and 9 consumed 400 gallons or more.

Poultry. Two hundred and seventeen families consumed home-produced chickens at an average of 46 fowls per family. Eleven consumed no home-produced fowls. Twenty-three con-

sumed between 1 and 19, 78 between 20 and 39, 65 between 40 and 59, 26 between 60 and 79, and 25 consumed eighty or more.

Eggs. Two hundred and fifteen families consumed some home-produced eggs, at an average of 88 dozens per family. Thirteen consumed none. Thirty-seven consumed between 1 and 49 dozens, 86 between 50 and 99 dozens, 59 between 100 and 149 dozens, 22 between 150 and 199 dozens, and 11 consumed 200 dozens or more.

Pork. One hundred and ninety-five families consumed home produced pork at an average of 568 pounds per family. Thirty-three families consumed no home-killed pork. Twenty families consumed home-killed pork ranging in dressed weight from 75 to 199 pounds per family, 41 families from 200 to 399 pounds, 44 families from 400 to 599 pounds, 48 families from 600 to 799 pounds, 20 families from 800 to 999 pounds, and 22 families 1,000 pounds or more.

Other Foods. Two families consumed home-produced cheese, six families home-produced mutton and five home-produced beef.

Coal. Coal in seams of varying thickness and accessibility was present on most of the farms in this area. Two hundred and twelve of the families used coal mined on their home farms at an average of 268 bushels per family. Sixteen families used none, four between 1 and 99 bushels, 17 between 100 and 199 bushels, 81 between 200 and 299 bushels, 83 between 300 and 399 bushels, and 27 used 400 bushels or more.

Wood. One hundred and forty-five families used wood cut on the home farm, the average for these families being 4 cords per family. Eighty-three families used none, 14 between one and 1.9 cords, 64 between 2 and 3.9 cords, 37 between 4 and 5.9 cords, 13 between 6 and 7.9 cords, and 17 used 8 cords or more.

Other Products. Thirty-seven operators grew tobacco for personal or family use. Seven families used home-produced wool.

House Rent. In each case the farm was credited for the use of the house occupied by the family, at the rate of ten percent of the value of the house. The average value of the use of the house was $33 per family. In 34 cases the value was less than $10 per family, in 63 cases between $10 and $19, in 42 cases between $20 and $29, in 37 cases between $30 and $39, in 27 cases between $40 and $49 and in 25 cases $50 or more.

CAPITAL

The total capital investment used by the 228 operators averaged $2,812. The amount and distribution of the capital investment is shown in Table 8.

TABLE 8. Capital Investment of 228 Knott County Farms, by Districts, 1929.

Item	All Farms	District 1	District 2	District 4	District 6
Number of farms	228	62	50	62	54
Total capital	$2,812	$2,625	$2,444	$1,781	$4,551
Real estate	2,432	2,224	2,058	1,465	4,128
Dwelling	331	258	416	276	398
Other buildings	124	114	154	70	171
Livestock	262	296	275	228	248
Work stock	100	117	109	71	106
Cows	80	86	88	76	72
Other cattle	25	31	20	20	26
Sheep	4	6	3	2	3
Hogs	28	29	28	38	16
Poultry	25	27	27	21	25
Tools and implements	66	56	48	41	122
Feed and supplies	52	49	63	47	53

Two hundred and three of the farms had total capital of less than $5,000. Ten of these had capital of less than $500, 44 between $501 and $1,000, 51 between $1,001 and $1,500, 30 between $1,501 and $2,000, 25 between $2,001 and $2,500, 17 between $2,501 and $3,000, 12 between $3,001 and $3,500, 15 between $3,501 and $5,000. Of the 25 farms with total capital greater than $5,000, three had between $5,001 and

$6,000, 6 between $6,001 and $7,000, 8 between $7,001 and $10,000, and 8 more than $10,000.

One hundred and eighty-two of the 228 operators owned all or part of the land they operated. The total capital of these 182 owners averaged $3,105. The total capital of 30 of these was less than $1,000, of 73 of them between $1,000 and $1,999, 33 between $2,000 and $2,999, 16 between $3,000 and $3,999, 8 between $4,000 and $4,999. Twenty of the land owner-operators had $5,000 or more capital. Of these 14 ranged between $5,000 and $9,999 and 8 had total capital of $10,000 or more.

The capital of the 46 non-land owners averaged $233. Eight of these operators had capital of less than $100, 19 between $100 and $199, 7 between $200 and $299, 6 between $300 and $399, 3 between $400 and $499, and 3, $500 or more.

Of the total capital, real estate constituted 86 percent, livestock 9 percent, tools and implements 3 percent, feed and supplies 2 percent.

Farm dwellings averaged $331 in value per farm, and other buildings $124. Thirty-five of the farm dwellings had a value of less than $100, 63 between $100 and $199, 42 between $200 and $299, 38 between $300 and $399, 27 between $400 and $499, 8 between $500 and $599, 5 between $500 and $1,000, 7 between $1,000 and $1,500, and 5 more than $1,500.

The average value of land without buildings was $1,978 per farm and $17 per acre in 1929. In 1931 the value per acre was 28 percent less than the 1929 value. The value ascribed to these tracts is based principally on their furnishing a site for a dwelling house and a space to make a partial subsistence. The small amount of level land is rated at a high value, steep land without mineral rights or merchantable timber at low value. Bottom land is so highly prized that when offered for sale it finds eager buyers at prices ranging from $100 to $400 an acre.

Of the total amount invested in livestock cows constituted 39 percent, horses and mules 38 percent, hogs 11 percent, chickens and other poultry 10 percent, sheep 1 percent and other cattle 1 percent.

The tools and implements on most of the 228 farms were

of the simplest sort. Each of twenty-four farms had less than $10 worth of tools and implements, 70 farms between $10 and $19 worth, 32 between $20 and $29, 19 between $30 and $39, 17 between $40 and $49, 11 between $50 and $59, 13 between $60 and $69, 10 between $40 and $79, 10 between $81 and $99, 14 between $100 and $199, and 8 above $200.

As previously stated store keeping gave 20 operators an aggregate net return of $14,487. The store buildings had an average value of $252.

RECEIPTS

The "farm receipts" of the 228 operators are shown in Table 9. The average for all the farms was $506. Two hundred had receipts of less than $1,000. Fourteen of these had less than $100, 30 between $100 and $199, 40 between $200 and $299, 34 between $300 and $399, 26 between $400 and $499, 20 between $500 and $599, 15 between $600 and $699, 11 between $700 and $799, 3 between $800 and $899, 7 between $900 and $999. Of the 28 farms having total receipts of more than $1,000, 22 had receipts between $1,000 and $1,500 and 6 had receipts greater than $1,500.

Twenty percent of the total receipts came from crops, 13 percent from livestock, 66 percent from miscellaneous sources.

Crop sales averaged $99 for the 228 farms. Garden truck constituted the largest item in the sales of crops. Potatoes were second in importance. An examination of the sales of vegetables and fruits showed that all but 26 of the farms had such sales. Sixty-seven farms sold $25 worth or less, 42 farms $26 to $50 worth, 24 $51 to $75 worth, 20 $76 to $100 worth, 12 $101 to $125 worth, six $126 to $150 worth, eight $151 to $175 worth, four $176 to $200 worth. Nineteen had sales of vegetables and fruits greater than $200, nine of which ranged from $200 to $300, seven from $301 to $400, and two from $401 to $500. One had sales of vegetables and fruits amounting to $1,275.

Of farmers having incomes from other crops (averaging $5 per farm), 16 sold corn stover with an aggregate value of $290. Two sold yellow root aggregating $247, and 3 ginseng

aggregating $180. Six sold sorghum aggregating $205. Ten sold hay aggregating $153 and three sold popcorn aggregating $112. Twelve sold tobacco aggregating $89.

TABLE 9. Farm Receipts of 228 Knott County Farms, by Districts, 1929.

	All Farms	District 1	District 2	District 4	District 6
Number of farms	228	62	50	62	54
Crops (total)	$ 99	$ 78	$ 94	$ 95	$131
Corn	21	20	24	6	35
Potatoes	24	17	27	26	27
Sweetpotatoes	6	6	3	9	3
Fruit	8	4	3	11	13
Garden truck	35	25	29	41	45
Other crops	5	6	8	2	8
Livestock and livestock products	66	70	64	64	64
Cattle	26	31	26	19	28
Dairy products	3	1	–	8	1
Chickens	16	14	18	15	17
Eggs	17	18	19	13	18
Other livestock	4	6	1	9	*
Miscellaneous receipts	333	326	272	324	408
Important items:					
Farm work	54	28	34	120	26
Work at mines	37	28	11	79	23
Storekeeping (net)	64	68	87	–	110
Work with teams	24	23	16	13	44
Oil and gas leases	45	48	50	7	80
Timber	39	29	42	26	64
Other receipts	8	10	17	4	5
Total farm receipts	506	484	447	487	608

*Less than $1.

Poultry and eggs made up half of the receipts from livestock sources and cattle 40 percent. Dairy products accounted for most of the remainder. Receipts from chickens and eggs averaged $33 for the 228 farms. From this source, 49 had receipts of less than $10, 43 between $10 and $19, 37 between $20 and $29, 25 between $30 and $39, 19 between $40 and $49,

15 between $50 and $59, 15 between $60 and $69, 8 between $70 and $79, 6 between $80 and $89, and 11 had receipts of $90 or more.

Miscellaneous receipts made up nearly two-thirds of the total receipts. The principal items of miscellaneous receipts are shown in Table 13. Further data of this class of receipts have been presented on page 176. In addition to the items of receipts presented in Table 9, the farm contributed items for the family living of an aggregate value of $481 (see pages 162, 163 and 164).

EXPENSES

Total farm expenses for the 228 farms averaged $215 per farm. The items of expenses are presented in Table 10. Two hundred and fifteen of the operators had farm expenses of less than $500. Of these forty-seven had expenses less than $100, 77 from $100 to $199, 59 from $200 to $299, 19 from $300 to $399, 12 from $400 to $499. Thirteen operators had farm expenses greater than $500. In ten of these cases the item was between $500 and $1,000 and in three cases greater than $1,000.

Of the cash expenses purchased feeds were the largest single item. Next in order came hired labor and taxes. One hundred and forty-eight of the 228 operators purchased grain feeds. Of these, 55 purchased less than $25 worth, 43 from $25 to $49, 19 from $50 to $74, 12 from $75 to $99, 16 from $100 to $199, and 3 $200 worth or more.

Fifty-six of the 228 operators purchased hay or other roughage. Thirty-four of these purchased less than $25 worth, 15 from $25 to $49, four from $50 to $74, and 3 purchased $75 worth or more.

One hundred and thirty of the 228 farmers hired some labor. Fifty-nine of these hired less than $25 worth, 26 from $25 to $49, 14 from $50 to $74, 13 from $75 to $99, 10 from $100 to $199, and 8 $200 or more.

One hundred and forty-six of the 228 farms used some unpaid family labor other than that of the operator. On 58 of these farms the item was less than $100, on 75 between $100 and $199, and on 12 $200 or more.

Two hundred and twenty-three of the 228 farms purchased some seeds. One hundred and ninety-two had purchases of

$8 or less. Of these 50 had purchases of $1 or less, 39 between $1.01 and $2, 27 between $2.01 and $3, 27 between $3.01 and $4, 16 between $4.01 and $5, 11 between $5.01 and $6, 8 between $6.01 and $7, 14 between $7.01 and $8. Thirty-six of the 228 had seed purchases of greater than $8. Nineteen of these had purchases between $9 and $19, 8 between $20 and $29, and eight $30 or more.

TABLE 10. Farm Expenses, Labor Income, and Operator's Earnings of 228 Knott County Farm Operators, by Districts, 1929.

Item	All Farms	District 1	District 2	District 4	District 6
Number of farms	228	62	50	62	54
Expenses:					
Current:	$129	$129	$ 82	$119	$184
Hired labor	35	35	22	30	52
Machinery repairs	2	2	1	3	4
Dwelling repairs	3	2	1	2	5
Other bldg. repairs	*	*	—	*	—
Fence repairs	4	4	1	7	3
Feed:					
Hay, stover	6	5	4	3	12
Grain	33	32	17	35	45
Seeds	7	10	4	6	7
Taxes	29	28	24	23	48
Depreciation	15	15	14	14	18
Unpaid family labor	71	71	66	65	80
Total expenses	215	215	162	198	282
Labor income	$151	$138	$163	$200	$ 99
Family living from farm	481	458	519	495	456
Opeartor's earnings	632	596	682	695	555

*Less than 50 cents.

Taxes averaged $29 per farm. On 43 farms taxes were less than $10, on 84 between $10 and $19, on 40 between $20 and $29, on 22 between $30 and $39, on 10 between $40 and $49, on 11 between $50 and $59 and on 18 $60 or more.

Ten of the 228 farmers purchased some fertilizer, the aggregate value of which was $63. Nine of the 228 farmers had telephones the aggregate cost of which was $51. Only one of the 228 paid out anything for insurance on farm property.

LABOR INCOME AND OPERATOR'S EARNINGS

In analyzing the business of operators engaged in farming on a commercial scale, "labor income" is used as a measure of net returns. Labor income is that which a farm operator has left over as pay for his year's labor and management, after deducting from the total farm receipts the interest on his capital investment and all farm expenses, including the value of the unpaid labor of members of his family. Besides his labor income a farm operator also has the benefit of the food, fuel, use of a dwelling house, and other items of family living furnished by the farm. The value of these perquisities or family-living items averaged $481 per farm. This, when added to the labor income which averaged $151 for the 228 farms, gave a total of $632 which is designated operators earnings.

Nine of the operators had operators earnings of less than $100, three of these minus amounts. Twelve had operators earnings between $100 and $199, 18 between $200 and $299, 26 between $300 and $399, 29 between $400 and $499, 29 between $500 and $599, 27 between $600 and $699, 19 between $700 and $799, 15 between $800 and $899, 9 between $900 and $999. There were 35 farms with operators earnings of $1,000 or more, of which 15 ranged between $1,000 and $1,199, 10 between $1,200 and $1,399, and 10 of $1,400 or more.

TEN MOST SUCCESSFUL OPERATORS

Ten of the 228 operators had net earnings greater than $1,400. Nine of the ten were part-time farmers who derived only a minor part of their receipts from crops and livestock enterprises. Only one of them was a full-time farmer deriving his income from actual farming operations. The ten operators are referred to in the following paragraphs in the order of the size of their net earnings.

The most successful operator had net earnings of $2,924 and total receipts of $4,663, of which 87 percent came from non-farming sources—lumber $2,500, profits from storekeeping $1,000, oil and gas lease $600, and team work $200. Income from crops and livestock enterprises amounted to a total of $663, the chief items of which were potatoes $30, sales from

the dairy enterprise $148, from the hog enterprise $170, from the poultry enterprise $177.

The next most successful operator had net earnings of $2,346. Total receipts amounted to $2,330 of which $1,500 came from the profits of storekeeping, $100 from oil and gas leases, and $740 from crops and livestock enterprises, $549 of which represented profits from trading cattle, $100 from the sale of hogs, $45 from the sale of eggs, and $36 from the sale of potatoes and garden truck.

Coal mining, which gave wages of $1,262, was the principal source of income of the operator who made the third largest net income, $1,801. Other important incomes of this operator consisted of $88 from the sale of vegetables and potatoes, $20 from fruit, $47 from the cattle enterprise, and $20 from poultry. In addition the family had perquisites furnished by the farm amounting to $546.

The fourth largest net income was $1,696 made by an operator whose income consisted of $1,200 profits from storekeeping, $125 from an oil and gas lease, and $62 from cattle and poultry. In addition this operator had items of family living from the farm having a value of $908.

The next most successful operator had net earnings of $1,632. Total receipts amounted to $2,984, the chief sources of which were net profits from storekeeping, $2,400, potatoes sold, $320, and net returns from cows and poultry, $129. The family living from the farm had a value of $584.

The net earnings of the next most successful operator were $1,557. Total receipts were $1,309, of which $500 came from an oil and gas lease, $400 from a coal lease, $75 from peddling groceries, $47 from the sale of potatoes and vegetables, $20 from the sale of sorghum molasses, $95 from cattle, and $52 from poultry. The family living from the farm had a value of $53.

The next most successful operator derived $600 of his total receipts of $1,046 from storekeeping, $203 from the sale of potatoes and vegetables, $35 from the sale of fruit, $168 from poultry and eggs, and $40 from cattle. The family living from the farm had a value of $1,009 and his net earnings totaled $1,519.

The next most successful operator was a full-time farmer with net earnings of $1,454. Total receipts of $1,452 were derived from sales of vegetables $1,135, potatoes $120, sorghum molasses $81, apples $20, poultry $75, calf $15, and pork $6. The family living from the farm had a value of $374.

The operator next in order of financial success had net earnings of $1,452, and total receipts of $974. The chief sources of receipts were 8 months work at the mines $800, team work $70, and sales of potatoes $36, vegetables $33, fruit and other crops $78. Farm perquisites had a value of $787.

The next most successful operator had net earnings of $1,393. The chief sources of receipts were profits from storekeeping $504, team work $10, sales of potatoes $160, and of garden truck $76, sale of pork $247, and of cattle $20. Farm perquisites had a value of $637.

TABLE 11. Comparison of Factors When Farms Are Grouped on the Magnitude of Non-Farming Receipts of the Operator, 228 Knott County Farms.

	Magnitude of non-farming receipts of operators				
	Average	Highest ¼	2nd ¼	3rd ¼	Lowest ¼
Number of farms	228	57	57	57	57
Size of farm (acres)	113	178.6	827	101.2	89.6
Investment	$2,812	$5,220	$1,968	$2,225	$1,835
Receipts (total)	506	1,082	451	271	219
Crops and livestock	173	186	151	151	203
Miscellaneous*	333	896	300	120	16
Per cent mis'l. receipts are of total receipts	66%	83%	67%	44%	7%
Expenses	$215	$369	$181	$148	$160
Farm income	291	713	270	123	59
Labor income	151	452	172	11	–33
Family living from the farm	481	549	456	484	435
Operators' earnings	632	1,001	628	495	402

*Non-farming sources.

Table 11 presents the results of classifying the records of the 228 farms on the basis of amount of the non-farming receipts of the operators. Again the outstanding effect of non-

farming income on total net incomes is demonstrated. The one-fourth of the operators having the largest amounts of non-farming income has net earnings two and a half times as great as the one-fourth of the operators who had the smallest amounts of non-farming income.

FACTORS DETERMINING THE NET INCOMES OF OPERATORS

A comparison of net incomes and other factors of farms having non-farming receipts of varying amounts is shown in Table 11. The operators earnings of the one-fourth of the operators having the highest non-farming receipts were two and a half times those of the one-fourth having the lowest non-farming receipts. This and other tables show that the families having the largest incomes from non-farming sources had the largest net incomes and the best standards of living.

Two hundred and two of the 228 operators derived part of their earnings from non-farming sources, the income from non-farming sources averaging $378 for the 221 operators.

The 20 operators who operated stores averaged net incomes of $724 from that source. The 74 who received incomes from oil and gas leases averaged $138 from that source. The 26 who received incomes from mining averaged $326 from that source. The 32 who received incomes from timber products averaged $280 from that source. The 34 who received incomes from team work averaged $159 from that source. The 19 who received incomes from work in timber averaged $146 from that source. The 8 who received incomes from work on power line averaged $240 from that source. The 17 who received incomes from peddling averaged $99 from that source. The 10 who received incomes from carpenter work averaged $140 from that source. The 7 who received incomes from blacksmithing averaged $155 from that source. The 2 who received incomes as part-time county official averaged $732 from that source. The 4 who received incomes from work in postal service averaged $257 from that source. The 4 who received incomes from stone mason service averaged $176 from that source. The 7 who received incomes from jury service averaged $57 from that source. The 2 who received incomes from custom sawing averaged $262 from that source.

RELATION OF NON-FARMING INCOME TO NET INCOME OF OPERATORS

Various tests of the data of the study were made to ascertain what factors determine the size of income of operators and families living on farms in this area. Every test revealed that the outstanding determinant of incomes was the size of the receipts from non-farming sources. Table 12 shows a comparison of factors when the farms are classified into four groups on the basis of the magnitude of the net earnings of their operators. The most successful one-fourth of the operators made net earnings averaging $1,167 as compared with net earnings of $212, the average for the least successful one-fourth of the operators. There was a marked contrast in the total receipts of the four groups, these being $1,035, $463, $280, and $246 respectively. It is particularly significant that the more successful operators had the highest miscellaneous receipts.

TABLE 12. Comparison of Factors on Farms With Incomes of Different Magnitudes.

Item	Magnitude of Operator's Earnings				
	Average	Highest ¼	2nd ¼	3rd ¼	Lowest ¼
Number of farms	228	57	57	57	57
Size of farms (acres)	113	128.6	76.9	81.5	165.2
Investment (dollars)	$2,812	$3,648	$1,978	$1,740	$3,882
Receipts (total)	506	1,035	463	280	246
Crop and livestock	173	308	163	131	90
Miscellaneous*	333	727	300	149	156
Expenses	215	310	168	157	223
Farm income	291	725	295	123	23
Labor income	151	543	197	36	–173
Family living from the farm	481	624	482	433	384
Operator's earnings	632	1,167	679	469	212

*Non-farming sources.

An examination was made of the records of the 20 operators who had the highest net earnings. These were compared

with the 20 operators who had the lowest net earnings and with the averages of all operators. The most successful twenty operators had net earnings averaging $1,537, the least successful twenty had net earnings averaging $66. The difference which appeared most significant in accounting for the difference on profits were: Total receipts, $1,521 as against $403; non-farming receipts, $1,140 as against $296; (the difference in the items of miscellaneous receipts in the high income and low income groups are shown in Table 13), crops sales (principally garden truck, and potatoes) $233 as against $52; livestock and livestock products (principally cattle, dairy products, pork and poultry) $133 as against $55; family living from the farm $664 as against $436; farm-furnished food $570 as against $368, use of dwelling house $60 as against $40.

TABLE 13. Comparison of Miscellaneous Receipts of the Most Successful Twenty Operators With the Least Successful Twenty and Average Operators, 228 Knott County Farms.

Item	228 Farms	Most Successful 20 Operators	Least Successful 20 Operators
Farm work	$ 54	$ 162	$ 1
Mining	37	72	10
Store	64	437	5
Team work	24	14	43
Oil and gas leases	45	109	144
Timber	39	285	61
Other miscellaneous	70	61	32
Total miscellaneous income	333	1,140	296

Farm operators who were also storekeepers made net earnings which averaged $1,183 as compared with $584 net earnings of non-storekeeping farm operators.

Of considerable importance in determining the incomes of operators living on farms in Knott County was the receipt of payments for the gas and oil rights on the land. The net earnings of the 74 operators having receipts from gas or oil leases averaged $699 as against net earnings of $599 of the 154 farm operators not having such receipts.

A significant effect on the net earnings of farm operators was the accessibility of farms to opportunities for remunerative

non-farming work and to sale outlets for farm produce. This is demonstrated by 35 farms in District 4 located conveniently to opportunities of this kind. The net earnings of these 35 operators averaged $739 in comparison with net earnings of $577 of operators who did not have the advantage of such favorable location.

Table 14 shows the farms classified according to receipts from the sale of vegetables and fruits. The farms which received $300 or more from that source gave operators earnings which were nearly double those for the farms which received less than $100 of receipts from vegetables and fruits.

TABLE 14. Relation of Sales of Vegetables and Fruits to Labor Incomes and Operator's Earnings—228 Knott County Farms.

Receipts from fruits and vegetables	No. of farms	Sales of vegetables and fruits	Labor Income	Operator's Earnings
$300 and over	10	$461	$475	$1,057
$200 to $300	9	248	325	1,095
$100 to $200	30	139	98	634
Less than $100	179	33	133	584
Average	228	74	151	632

Since income from non-farming sources is so significant in determining the standard of living in this area it is important to ascertain what are the chief factors responsible for non-farming receipts. The study shows these factors to be:

A. Personal characteristics and circumstances which enable one to obtain and hold employment at such work as that of miner, carpenter, stone mason, blacksmith, teamster on public work, and other occupations commanding good wages; and characteristics and conditions which enable one to obtain appointment or election to remunerative public position or office.

B. Conditions making possible the procuring of profits from merchandizing, such as favorable location with reference

to customers, and the aptitude, business ability, personal popularity, and other characteristics fitting one for merchandizing.

C. The possession of land underlain with gas or oil and the ability to lease the land on favorable terms, also the possession of timber accessible to favorable markets and the ability to sell it profitably.

ORGANIZATION OF FULL-TIME FARMS

Only 22 of the 228 operators were full-time farmers. Opportunities for full-time farming are sharply limited. One limitation is the extreme scarcity of good agricultural land which makes impracticable the production of grain, livestock or livestock products for outside markets. It is evident that the only profitable full-time commercial farming in this area is the production of vegetables, poultry, eggs, etc., for sale locally. This type of farming is sharply limited by local consumer demand. Local sales outlets are subject to gluts even when the mines in and near the area are operating full-time. Sales outlets decline toward the vanishing point when the mines shut down or operate on part-time as they did after 1929. Then, too, because of distance, of poor transportation facilities, only a limited number of operators are able to take advantage of local consumer markets.

The organization of the 22 full-time farms is shown in Table 15. On an average these farms were about one-sixth smaller than the 228 farms, their corn acreage was one-eighth smaller and their total investment and real estate investment one-third smaller than those of the 228 farms. Their investment in livestock averaged $236, and was one-tenth less than that of the 228 farms. The investment in horses and mules was one-third less. In cattle and poultry the investment was about the same, in hogs about one-fifth less, and in tools and implements about one-half that of the 228 farms. The difference in capital investment in livestock and implements between the full-time farms and the 228 farms was chiefly that the 22 farmers practically confined their operations to their own farms, and had less need for teams and implements.

TABLE 15. Factors on 22 "Full Time" Farms Compared with the Same Factors on the 10 Most Successful and the 10 Least Successful "Full Time" Farms and 228 Farms, Knott County.

Item	22 Full Time Farmers	10 Most Successful Full Time Farmers	10 Least Successful Full Time Farmers	All Farms (228)
Acres operated	95	84	117	113
Total capital	$1,920	$1,720	$2,252	$2,812
Acres in crops	12.5	13.7	11.9	12.9
Acres in corn	8.0	9.0	7.4	9.2
Total receipts	$ 375	$ 558	$ 207	$ 506
Crop receipts	255	399	123	99
Potato receipts	54	68	35	24
Sweetpotato receipts	17	21	13	6
Fruit receipts	24	34	9	8
Garden receipts	123	207	47	35
Net livestock increases	99	120	88	66
Dairy cattle increases	37	42	30	29
Poultry increase	51	65	46	33
Hogs increase	11	9	16	6
Miscellaneous receipts	19	33	8	333
Total expense	142	151	143	215
Hired labor	31	45	24	35
Feed	25	35	16	39
Seed	6	7	4	7
Taxes	20	20	21	30
Unpaid family labor	38	10	64	71
Farm income	233	407	64	291
Labor income	137	321	−49	151
Family living from the farm	489	549	442	481
Net earnings	626	870	393	632

The total receipts of the 22 farms were one-fourth less than those of all the farms, the difference being principally the larger miscellaneous receipts of the part-time farmers. In crop receipts the 22 farmers exceeded the 228 farms by 150 percent and in livestock by 50 percent.

The 22 farms had much larger sales of potatoes, garden truck, fruit, poultry and eggs, and dairy products.

The average of the labor incomes of the full-time farmers was 10 percent less than that of the 228 operators. The labor incomes of the 10 most successful full-time farmers averaged less than one-fourth and operators earnings less than half those of the 10 most successful part-time farmers.

FACTORS DETERMINING EARNINGS OF FULL-TIME FARMERS

Table 15, columns 2 and 3, contrasts the more successful and less successful of the full-time farmers in terms of net income earned, and point to the factors chiefly responsible for the differences. The net farm income of the more successful 10 farmers was six and a half times and the operators earnings two and a half times that of the less successful 10 farmers. The more successful operators had a larger crop acreage—13.7 against 11.9 acres. The garden truck, potatoes, and sweet-potatoes sold by the more successful farmers were worth more than three times those of the less successful farmers. Fruit sales of the more successful farmers were nearly 4 times, and total crop sales 3¼ times those of the less successful farmers. Net returns from the cattle enterprise for the more successful farmers exceeded those of the less successful by 30 percent, and returns from poultry by 30 percent. Sales of hogs were 44 percent less on the more successful farms. Total farm expenses varied only slightly. The more successful farmers had considerably higher outlays for seeds, feeds and hired labor.

The outstanding factor for good sized earnings in full-time farming was shown to be the situation and ability of farmers favorable to selling truck crops, fruits, and produce to local consumers. This being a deficit area for commodities of this type, the local price includes the cost of growing at distant points plus the transportation and other costs of bringing the products to consumers in this area. This makes possible a favorable price to local producers whose circumstances permit them to sell on the local market. However, when local production increases beyond the local demand thereby necessitating the shipping of produce to markets outside the area, the resulting lower price received by producers in this area makes it impracticable for them to produce commercially at a profit.

The amount of vegetables and poultry products shipped into the area for local consumer use prior to 1929 greatly exceeded that produced locally. Local producers of vegetables, fruits, poultry, eggs, fresh milk and cream and other products have the opportunity to expand production to the point of

more nearly meeting the local demand. Transportation and other handling costs of such products are relatively high. Local growers have much to learn in producing products to meet consumer taste and preference. More attention to the selection of varieties preferred by consumers and the grading, packing, and standardizing products would enable local producers to gain and hold a much greater part of the total local trade.

SUMMARY AND CONCLUSIONS

This report presents an analysis of the incomes and farm businesses of representative farm families of Knott County, based on 228 records for the farm year ending April 1, 1930, and 25 records for the year ending April 1, 1932. The county is typical of the more precipitous Eastern half of the Kentucky mountain area.

This region is deeply dissected by narrow valleys between steep, sharp-crested hills, the result being an extreme scarcity of tillable land. The county has a population of 44 persons per square mile, which is a greater density than that of most of the good agricultural sections of Kentucky.

Coal mines near the county border, furnished, in normal times, part-time or full-time employment to members of Knott County farm families, from one-third to one-half of whom lived within daily walking or riding distance. The mining camps also afforded a market for vegetables, poultry products, and other farm products produced within a radius of a few miles of these camps.

Only 15 percent of the 228 farm families made their living mainly from farming. The rest got their incomes chiefly from work in the coal mines, work with teams, storekeeping, oil and gas leases and timber. Receipts from these outside sources amounted to $333 per family, for the year. Receipts from crops and livestock enterprises averaged only $165 per family and failed by $42 per family to meet the farm operating expenses. Potatoes and other garden truck, and dairy and poultry products were the chief farm products sold.

The greater part of the products of these farms was used

for the subsistence of the operators and their families. The subsistence value of this averaged $481 per family, which is about three times that of the sales from crops and livestock enterprises.

The spendable income from all sources for the year was small, averaging $518 per family. One-fifth of the families had spendable incomes of $200 or less. In 1931, because of the shutting down or partial discontinuance of the operation of the mines and other outside work, the spendable incomes dropped to an average of $286 per family, and one-fourth of the families had less than $100 total spendable income each.

The average size of the 228 farms was 113 acres. A third of them were smaller than 50 acres and two-thirds, smaller than 100 acres. Most of the area of these farms was in woods and brush. There was less than 4 acres of well-lying land per family. Thirty-eight of the 228 families had no well-lying land; 57 had less than one acre each, and 94 had less than two acres each. Only 7 had 20 acres or more of such land.

Crop acreages averaged 13 acres per farm, mostly on steep, eroded slopes. Seven-tenths of the crop area was in corn, one-tenth in hay, and one-tenth in gardens and potato patches.

The numbers of livestock were very small, averaging 3 animal units per 100 acres. This contrasts with 13 units per 100 acres on representative farms in Bourbon and Union Counties, located in good agricultural sections of Kentucky. Most of the livestock were work animals and milk cows.

Low yields of crops were the rule. For all the farms corn averaged less than 20 bushels per acre.

The total capital used by the 228 operators averaged $2,812. The total capital of those who owned all or part of the land operated averaged $3,105; that of non-land-owning operators, $223. The value of dwelling houses averaged $331 per family.

The most successful ten of the 228 operators had net earnings greater than $1,400 each. Nine of the ten were part-time farmers who derived only a minor part of their receipts from crops and livestock enterprises. Only one of them was a full-time farmer deriving his income from actual farming

operations. The most successful full-time farmer had total receipts of $1,452, derived from sales of vegetables, $1,135; potatoes, $120; sorghum molasses, $81; apples, $20; poultry, $75; calf, $15, and pork $6.

The families having the largest incomes from sources away from the farm had the largest net incomes and the best standards of living. Earnings of the one-fourth of the operators having the highest receipts from outside sources were two and a half times those of the one-fourth having the lowest receipts from outside sources. Every test of the data brought out the fact that the outstanding detriment of the magnitude of incomes was the size of the receipts from outside sources.

The only profitable full-time commercial farming in this area consists of the production of specialties such as vegetables, poultry, eggs, etc., for sale locally. The opportunity for engaging in this type of farming is restricted by local consumer demand. Because of distances to local markets or the difficulty of getting to these markets, only a limited number of operators can market specialty products to local consumers profitably.

The study shows unmistakably that farming in Knott County and the large territory of which it is typical, cannot be depended upon as an exclusive means of livelihood, even under favorable conditions of prices and markets. Without supplementary industrial or other non-farming occupation, it appears that the present population in this territory can be adequately supported only by contributions from other sources.

Farmers should confine their cultivated crops principally to the well-lying land and devote the slopes to woods and sods. Livestock, because of the scarcity of feeds, should be chiefly grass and roughage-eating animals, and in most cases limited to those used for the family subsistence. Because of the extreme scarcity of well-lying tillable land, a larger place in the farm organization should be given to crops like potatoes and truck, and more intensive methods should be employed in the production of all crops grown. Growing intensive crops and using more intensive methods are equivalent to increasing the amount of crop land. If the fullest use were made of the limited amount of good tillable land, there would be a reduc-

tion of steep land acreage which many operators, by their use of less intensive crops and methods, are compelled to cultivate.